REMARKS

The Examiner has rejected claims 1-8, 10-19 and 21-22 under 35 U.S.C. § 102(b) as being anticipated by Hongel, U.S. Patent No. 4,959,746. In addition, the Examiner has rejected claim 9 under 35 U.S.C. § 103(a) as being unpatentable over the Hongel '746 in view of Beurrier, U.S. Patent No. 3,694,765 and has rejected claim 20 under 35 U.S.C. § 103 (a) over the Hongel '746 patent in view Blain et al., U.S. Patent No. 6,347,024. As hereinafter described, applicant has amended the claims to more particularly define the invention for which protection is sought. Reconsideration of the Examiner's rejections are respectfully requested in view of the following comments.

Claim 1 defines a device for providing arcing between contacts of a switching device as the contacts of the switching device are opened. The switching device includes a coil for controlling the opening of the contacts. The device includes a coil suppression circuit connected in parallel to the coil. The coil suppression circuit dissipates the energy stored in the coil in response to the de-energization of the coil. The coil suppression circuit includes a first zener diode having a cathode operatively connected to the coil and the anode. In addition, the coil suppression includes a second zener diode having a cathode operatively connected to an anode of the first zener diode and an anode. A driver has an input operatively connected to the anode of first zener diode and an output. A first solid state switch has a gate operatively connected to output of the driver and is connected in parallel with the contacts. The first solid state switch is movable between an open position for preventing the flow of current therethrough and a closed position. The driver closes the first solid state switch in response to a reference voltage across the first zener diode.

The Hongel '746 patent discloses a relay contact protective circuit that prevents arcing between contacts of the switching device as the contacts of the switching device are opened. The device includes coil 10a (Fig. 4) for controlling the opening of contacts 10b. The coil

suppression circuit is connected in parallel with coil 10a between the positive and negative terminals of coil 10a. As such, a predetermined voltage is provided to the coil suppression circuit when coil 10a is energized. Consequently, the coil suppression circuit disclosed in Fig. 4 of the '746 patent must continually monitor the voltage across 10a. This structure is unlike the circuit of the present invention wherein coil suppression circuit is actuated only when the coil is de-energized. More specifically, claim 1 requires the first and second zener diodes to be reversed bias. As a result, the second zener diode prevents current from flowing through the first and second zener diodes when a voltage is provided across the coil. When the coil voltage is removed, the coil releases all of its energy. A portion of the energy is released by the coil is dissipated by the first zener diode such that the first zener diode generates a reference voltage. In response this reference voltage, the driver closes the first solid state switch. Hence, unlike the circuit in the '746 patent, the coil suppression circuit of the present invention only operates in response to the reference voltage and in the absence of voltage across the coil.

In addition, given continual presence of voltage across the coil suppression circuit during energization of the coil disclosed in the '746 patent, it can be appreciated that such coil suppression circuit must dissipate the heat associated with operation of the circuit. On the other hand, the need for an arrangement to dissipate the heat generated by the coil suppression circuit is substantially reduced or eliminated in the device of independent claim 1. Consequently, it is believed that claim 1 defines over the '746 patent and is in proper form for allowance.

Claims 4 and 7-11 depend either directly or indirectly from independent claim 1 and further defines a device not shown or suggested in the art. It is believed that claims 4 and 7-11 are allowable as depending from an allowable base claim and in view of the subject matter of each claim.

Referring to claim 12, a bypass circuit is provided for preventing arcing of an electrical energy path between first and second contacts of a switching device having a coil wherein the contacts opening close in response to energization of the coil. The bypass circuit includes a first switch connected in parallel with the contact of the switching device. The first switch is movable between a closed position with the contacts open and an open position with the contacts closed. A voltage reference device is operatively connected to the coil. The voltage reference device generates a reference voltage in response to de-energization of the coil. An actuation circuit interconnects the coil and the first switch. The actuation circuit closes the first switch in response to the reference voltage.

As heretofore described with respect to independent claim 1, the closed depression circuit disclosed in Fig. 4 thereof does not respond to a reference voltage generated in response to de-energization of the coil. Such a structure is entirely absent from the '746 patent. Consequently, it is believed that independent claim 12 defines over the cited reference and is in proper form for allowance.

Claims 15-17 depend from claim 12 and further define a bypass circuit not shown in the art. It is believed that claims 15-17 are allowable as depending from an allowable base claim and in view of the subject matter of each claim.

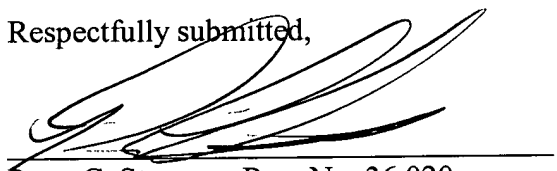
Claim 18 defines a bypass circuit for preventing arcing of electrical energy passing to the first and second contacts of a switching device having a coil wherein the contacts open and close in response to energization of the coil. The bypass circuit includes a first switch connected in parallel with the contacts of the switching device. The first switch is movable between an open

position and a closed position. An energy dissipation device is operatively connected to the coil for generating a reference voltage for a predetermined time period as the coil is de-energized. A driver interconnects the energy dissipation device in the first switch. The driver closes the first switch prior to the opening of the contacts in response to the reference voltage.

Again, as heretofore described with independent claims 1 and 12, nothing in the cited reference shows or suggests closing a first switch connected in parallel with the contacts of the switching device in response to a reference voltage generated as the coil is de-energized. Such a structure is entirely absent from the cited reference. Consequently, it is believed that independent claim 18 defines over the cited and is proper form for allowance. Claims 19-22 depend either directly or indirectly from independent claim 18 and further define a bypass or circuit not shown or suggested in the art. It is believed that claims 19-22 are allowable as depending from an allowable base claim and in view of the subject matter of each claim.

Applicant believes that the present application with claims 1, 4, 7-12, and 15-22 is in proper form for allowance and such action is earnestly solicited. The Director is hereby authorized to charge payment of any additional fees associated with this or any other communication or credit any overpayment to Deposit Account No. 50-1170.

Respectfully submitted,



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